

REMARKS

Claims 1-101 were pending in the present application. By virtue of this response, Claims 93-101 have been cancelled and Claims 1, 21, 40, 57, 73, 79, 84, 88, 89, 90, and 91 have been amended. Accordingly, Claims 1-92 are currently under consideration. Amendment and cancellation of certain claims is not to be construed as a dedication to the public of any of the subject matter of the claims as previously presented.

Allowable Subject Matter

Applicants understand per the Examiner that no claims are allowed, due to the §101 rejection, but Claims 21-30, 32-39 and 57-78 are otherwise allowable.

Claim Rejections-35 USC §101

Claims 1-78, 88-95 and 98-100 stand rejected under 35 U.S.C. §101 because allegedly the claimed invention is directed to non-statutory subject matter.

In response, the rejection is traversed, but Claims 1, 21, 40, 57, 73, and 88-91 are amended to overcome this rejection, see below.

Claim Rejections – 35 USC §103(a)

Claims 1, 2 and 79 stand rejected under 35 U.S.C. §103(a) as unpatentable over Tuoma et al. (U.S. 6,167,159) in view of Lee et al. (“Vertex Data Compression for Triangular Meshes”).

Claims 40, 84, 88, 90 and 91 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tuoma et al. in view of Lee et al. in further view of Mack (U.S. 6,831,637).

Claims 93-101 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tuoma et al. in view of Lee et al. in further view of Jung et al. (U.S. 5,978,030).

Claim Rejections-35 USC §102(b)

Claim 89 stands rejected under 35 U.S.C. §102(b) as anticipated by Tuoma et al. (US 6,167,159).

Claim Objections

Claims 3-20, 31, 41-56, 80-83, 85-87 and 92 were objected to as being dependent upon a rejected base claim, but otherwise deemed allowable, except for the §101 rejections.

Applicants express appreciation for the indication of allowance subject matter, but these claims have not been put into independent form since the independent claims otherwise distinguish over the references, as pointed out below.

§101 Rejections Overcome

The rejections under 35 U.S.C. §101 are traversed, however the rejected claims are amended here to expedite prosecution. Thus Claim 1 now reads in the preamble “A computer implemented method for compressing a file of an animation model for an animation cycle comprising a plurality of frames of animation of the animation model...”. Further the body of Claim 1 in the phrase begin “storing” now reads “storing as a compressed file in a database the reference model and differences...”. It is respectfully submitted that the amended claim is clearly directed to operations on a file and compressing a file for an animation cycle and that these are computer implemented steps and moreover that the storing is of a compressed file, in a database all of which are tangible steps, not abstract. The other claims rejected under 35 U.S.C. §101 are similarly amended and similarly overcome the rejection.

Rejections 35 U.S.C. §102 and 103

The claims here have been further amended to better recite the invention. As stated in paragraph 5 of the specification under Summary of the Invention “Generally the methodology uses an initial or reference model for selected frames of an animation sequence, and based on the reference model, predicts an offset model in each of the number of subsequent frames. The

prediction for the offset model at a subsequent frame is based on the relative position of control vertices on the surface of the model of the reference frame, as though its relative positions are mapped onto the surface of the offset model at the later, frame. The differences between the predicted vertices for the offset model and the actual vertices of the offset model are determined. These differences are preferably compressed for storage. The difference information takes a small number of bytes relative to the amount of data to store the actual control vertices information. This prediction process is repeated for each of the subsequent frames (e.g. 100-200 frames), using the initial reference frame as a prediction reference. The storage savings are achieved directly since the entire model data needs to be stored only for the reference posed, if the subsequent poses are stored in terms of the differences between the reference pose and the predictions for the poses of offset models. The compression of the difference information yields additional storage savings.”

Therefore, for each animation cycle which is up to several hundred animation frames, only the first frame, which is the reference frame data, needs to be stored and for the subsequent frames, only differences between the predicted vertices for the offset model and the actual vertices for the offset model for each of the remaining frames, need be stored. This provides substantial savings in data storage.

Moreover, it is of course directed to the animation situation where an animation sequence includes a number of frames of video. Thus what is meant by a reference model and an offset model are made clear now in each independent claim; the reference model is the first frame of the cycle and the offset model is the model for each of the remaining frames in the animation sequence.

This was originally stated in Claim 91 which recited “a reference model for the animation cycle, the reference model comprising a geometric representation describing a surface of the model for a first frame of the animation cycle; a plurality of compressed, offset animation models, each compressed offset animation model corresponding to a subsequent frame of the animation cycle...”.

Hence, the other independent claims have been amended similarly to Claim 91 to establish the relationship between the reference model and the offset models with the offset models corresponding to subsequent frames to the reference model in each animation cycle.

It is respectfully submitted that the chief cited reference Tuoma does not disclose or suggest this approach and neither do the other references. Note that none of the references are specific to the field or technical problems of animation. Instead they are directed to the more general problem of computer graphics. As such they are not concerned with storing a number of sequential frames of animation, but instead are concerned with a single model. Hence there is no reference model and offset model in Tuoma, or in the other references, as now recited in Claim 1. This is because there is no need for same, since these references do not deal with animation where there are large number frames of related data. While Tuoma does use compressed vertices as a reference, his is not a reference model with associated offset models for subsequent frames. Effectively therefore, Tuoma has only the reference model (or only the offset model), but not both since he is not concerned with a number of frames subsequent to the reference model frame. Hence, Tuoma, like the other prior art references, only has a single or individual model and is not particularly suited for the animation situation.

Hence Claim 1 distinguishes thereover at least because Claim 1 calls for “predicting offset vertices of the offset model for corresponding reference vertices of a reference model for a first frame of the animation cycle and associated with the offset model...” and “determining differences between the predicted offset vertices and actual offset vertices of the offset model for each subsequent frame of the animation cycle;”.

Each of the other independent claims have been amended here or already recite similar subject matter directed to both the reference and offset models being present and hence similarly distinguishes over the prior art references, both Tuoma taken by itself and in combination with the other prior art references. That is, neither Lee nor Mack nor Jung teach using the reference model for the first frame of the animation sequence with offset models for each subsequent frame and storing only the differences between the predicted offset vertices for the offset model and the actual

offset vertices plus the (first frame) reference model data. In accordance with the invention, this allows for reassembly (decompression) of the full animation cycle with minimal storage of data. This is especially useful in the animation situation where there are very large numbers of frames and hence very large amounts of data and this additional compression is useful.

The dependent claims are allowable for at least the same reasons as the base claims.

CONCLUSION

In view of the above, all presently pending claims in this application are believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing Attorney Docket No. 590282001700.

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